The diagram illustrates the seawater proxy $\delta^{13}C_{\text{carb}}$ (VPDB) over time, with U-Pb ages along the x-axis and time (Ma) along the y-axis. The varanger glaciation is marked by a significant event, while the shunem anomaly and trezona anomaly are also highlighted. Key geological events and locations are indicated, including the U-Pb ages mentioned:

- **Great Basin, USA**: Saltzmann et al. (2000)
- **Yudoma-Olenek, Siberia**: Basler and Sukhov (1998)
- **Adoudouian Fm, Morocco**: A.C. Maloof (unpubl.)
- **Turkut Fm, Siberia**: Bartley et al. (1998)
- **Nama Gp, Namibia**: Saylor et al. (1998)
- **Wonoka Fm, Australia**: Calver (2000)
- **Natun Group, Oman**: Burns and Matter (1993)
- **Otavi Group, Namibia**: Halverson and Hoffman (2003)
- **Hecta Hook Grp, Svalbard**: Halverson (2003)
- **Bitter Springs Fm, Australia**: Hill and Walter (2000)
- **Shaler Group, Canada**: Aamerom et al. (1991)
THE EARTH'S DIPOLAR MAGNETIC FIELD
Radiative heat balance (at equilibrium):

\[
R^2 E_S [1 - \alpha] = 4 R^2 [f \sigma T_s^4]
\]

- \( R \) = radius of the Earth
- \( E_S \) = solar irradiance
- \( \alpha \) = planetary albedo
- \( f \) = effective infrared transmission factor (greenhouse effect)
- \( \sigma \) = Stefan-Boltzman constant
- \( T_s \) = surface temperature

**Planetary Albedo:** The fraction of incoming radiation that is reflected back to space. 
[sea water ~0.1; bare land ~0.3; sea ice ~0.6; fresh snow ~0.9]

**Ice-Albedo Feedback:** For any imposed cooling (or warming), the resulting higher (or) albedo will cause further cooling (or warming). Thus, ice advance is self-stabilizing.

**Runaway Ice Albedo:** If ice lines close to within ~30° of the equator, the ice albedo feedback becomes unstoppable and ice quickly covers the tropics.

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*see Budyko, M.I., The effect of solar radiation variations on the climate of the Earth; TELLUS 21: 611-619 (1969).*